

CLAIMS

1. A process for metallising an article made from high temperature polymer plastic material including the steps of cleaning, plasma etching, grafting, and then metallising by immersion in a metallisation bath, characterised in that the metallisation bath is brought to a temperature between 50°C and 70°C.

5 2. The process according to claim 1, characterised in that the bath is brought to a temperature between 55°C to 65°C.

10 3. A metallisation process of an item made from high temperature plastic polymer material including the steps of cleaning, plasma etching, grafting, and then metallising by immersion in a metallisation bath, characterised in that the plasma etching stage uses a nitrogenous plasma of type N₂, or NH₃, or N₂+H₂.

15 4. The process according to any of claims 1 to 3, characterised in that the gas used for the plasma includes an inert noble gas such as neon, helium or argon, the inert gas being added in a proportion of 0,1 to 6 % to increase the dissociation of the nitrogen in reactive compounds of 7 to 8 % into free radicals.

20 5. The process according to any of claims 1 to 4, characterised in that the plasma activation time is in the order from 5 seconds to 5 minutes.

6. The process according to any of claims 1 to 5, characterised in that the power density of the plasma is in the order of 0,1 W/cm² to 1,1 W/cm².

25 7. The process according to any of claims 1 to 6, characterised in that the grafting is realised by immersing the item in an ionic solution including palladium salts, particularly chlorinated salts of PdCl₂ + HCl, and includes a graft of palladium ions.

8. The process according to any of claims 1 to 7, characterised in that the polymers are PBT, LCP, PPS or SPS.

30 9. The process according to any of claims 1 to 8, characterised in that the metallisation by immersion is completed to yield a thick metallisation by electro-chemical or galvanic deposition, a characteristic of the resulting product being that nitrogenous compounds are found therein by analysis of the polymer metal interface, the metallised layer having a thickness between 0.2 µm and 20 µm.

35 10. The process for metallising an article made from high temperature

polymer plastic material including the steps of cleaning, plasma etching, grafting, and then metallising by immersion in a metallisation bath, characterised in that the article includes parts made from different plastic materials, and in that the operating conditions for these stages are adjusted in
5 such manner that the metallisation is effective on one of these parts and not on the other.

11. The process according to any of claims 1 to 10, characterised in that the adjusted operating conditions of these stages are at least one of the following, certain of which are taken together in combination, or separately,:
10

- the nature of the activation plasma,
- the completion of one or more activation cycles before grafting,
- the waiting period after activation and before grafting,
- the duration of the metallising stage,
- the stirring rate of the metallisation bath,
- 15 - the temperature of the metallisation bath,
- the nature of the metallisation metal (nickel or copper).

12. The process according to any of claims 1 to 11, characterised in that the duration of the plasma action is less than or equal to 15 seconds.

13. The process according to any of claims 1 to 12, characterised in
20 that the metallisation bath is a copper bath.